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(54) **SYSTEM AND METHOD FOR INCREASING SIGNAL-TO-NOISE RATIO IN OPTICAL-BASED SENSOR SYSTEMS**

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See application file for complete search history.

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(57) **ABSTRACT**

A method includes passing a portion of an optical signal through an aperture of a sensor having a sensing element, wherein the portion of the optical signal that passes through the aperture is an inner portion of the optical signal and the portion of the optical signal that does not pass through the aperture is an outer portion of the optical signal; producing a sensed signal by sensing the outer portion of the optical signal with the sensing element; and controlling the source of the optical signal using the sensed signal. A system for implementing the method includes an optical energy source and a sensor having an optical sensing portion and an aperture therein. The system may also include an optical isolator, a detection element, and a controller for controlling the optical energy source. The system may be used within a MEMS-based system.

17 Claims, 4 Drawing Sheets